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ABSTRACT

A prevocational work skills training program for moderately retarded students emphasizes the need for developmentally appropriate tasks, concern for increasing students' attention span, orderly arrangement within tasks, and increased proficiency after training. Major units in the program focus on concepts of similarity and difference, large and small, matching and sorting, manipulation, tool use and object assembly, packaging, collating, and mailing skills. Tasks are performed within an assembly line framework to develop cooperation among workers. Photographs of the tasks are accompanied by data on pre- and posttest performance. (CL)

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WORK SKILLS FOR PREVOCATIONAL TRAINING

By

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Council for Exceptional Children
61st. Annual International Convention
Detroit, Michigan
April 5, 1983

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DEDICATION

The author dedicates this paper to the memory of his father, Thomas Nicholas Skaggs, without whose inspiration the Jo Kelly Occupational Orientation Program might not exist and to Dr. Eloise H. Jones, his first mentor in Special Education.

ACKNOWLEDGEMENTS

The author wishes to thank Bob Reed, English teacher at Paschal High School in Fort Worth, Texas, and to Bill Jorgenson, Vocational Evaluator for the Tarrant County Association for the Blind. Both men read the original manuscript and made many valuable suggestions for improvement. He also wishes to thank Sarah McKenzie, Principal, Jo Kelly School and Dale Roberts, Supervisor/ Diagnostician, Jo Kelly School. Both women have been overwhelmingly supportive as the author has put together the Occupational Orientation Program during the past three years. He is also grateful to instructional aides Evelyn Dixon and Priscilla Mallonee. They have played an indispensable part in development of the program.

WORK SKILLS FOR PREVOCATIONAL TRAINING

The following paper is an abstract of a slide show presented at the 61st Annual National Convention of the Council for Exceptional Children in Detroit, Michigan, April 5, 1983. The slide program was taken from Curriculum Bulletin #615, Work Skills for Prevocational Training, written by the author and published by the Fort Worth Independent School District Division of Curriculum, August, 1981. The author designed and built all the work-sample items listed in this paper. The district designed Curriculum Bulletin #615 for use with lower functioning mentally retarded students, such as those found at Jo Kelly School in Fort Worth. These students function from preschool through about third grade level.[1]

The purpose of the activities in the slide show is twofold: first, to prepare students for employment in a sheltered workshop and/or competitive private employment setting; second, to prepare students for vocational assessments done while they are in school and after graduation.

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[1]In general the students at Jo Kelly School function within the AAMD classification of moderately retarded. IQ's range from approximately 20 to 50 with a mean of about 40.

Major Concepts

The author designed the program around five major theories.

First, is the idea that tasks for lower functioning mentally retarded students must present an appropriate level of difficulty. Students tend to become bored if an activity is too easy.[2] They are overwhelmed and defeated if an activity is too difficult. Hence, activities in each unit graduate step-by-step from very simple to more difficult. Almost all students master the initial tasks in each unit. The simpler tasks build the student's confidence. More difficult subsequent activities challenge the student's ability. (See Table II, p. 9 and Table VI, p. 18)

Second, is the idea that the student's attention span and worker endurance can be improved gradually. Students complete initial tasks in one or two minutes and graduate to those that take an average of forty-five minutes. (See Table III, p. 10 and Table VII p. 19)

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[2]Although mentally retarded persons tend to resist boredom better than "normal" persons, three years of teaching occupational orientation convinces the author that mentally retarded persons are not completely immune to boredom.

Third, tasks should teach order and symmetry. They should not present the student with confusing at-random puzzles. If a student removes and replaces bolts and nuts in a panel, then those bolts and nuts should be arranged in logical order. In other words, a 3/4" bolt should be followed by a 11/16" bolt and an 11/16" bolt should be followed by the next size, a 9/16" bolt.

Fourth, students eventually master tasks that were once beyond their capabilities.

Fifth, students who initially perform a task when pretested, perform the task more efficiently on posttest at a statistically significant rate.

Major Units

The major units in the program include, telling whether items are alike or different, whether they are large or small, matching/sorting, manipulation, tool use and object assembly, packaging, collating and mailing skills. Although most of the tasks are done individually, the instructor sets-up several on an assembly line basis. Assembly line activities develop cooperation skills among workers while individual activities develop specific skills.

Likeness and Difference

One of the first concepts the instructor teaches is that some items are alike and others are different. The teacher places three large blocks of wood in front of the

student. He may use two square blocks and a round block or two round blocks and a square block. The student points out the two blocks that are alike and the block that is different.

Large and Small

The instructor also teaches students that some items are large and others are small. The instructor places three blocks of wood in front of the student. One block is a 13" square, one a 6 1/2" square and the final one a 5" square. The student identifies the large block, the small block and the middle size block.

Matching and Sorting

Once students master the concepts of likeness and difference and large and small, they are ready to begin matching/sorting activities. The first activities require the student to match and sort up to eleven different colors and six different shapes. Next follows a group of eight increasingly difficult partitioned sorting boxes. Each box contains enough cells for several different hardware type items. One item is embedded permently in the bottom of the cell in plastic casting resin. Students must select an identical item from a group of loose items and place it in

the cell with the embedded item. The teacher implimented the matching/sorting phase of the program by administering pretest and posttest stopwatch timings to students.[3] The instructor alloweed students three practice attempts at each box. If the student did not match 100% of the items in a particular box after the third practice trial, the teacher recorded a "no time' for that student. The instructor used a stopwatch to time those students who matched all items correctly in the practice attempts. He recorded each student's time on specially prepared forms. During the remainder of the year, students practiced the eight boxes. Near the end of the year, the instructor gave each student three final practice attemts. He made formal notations concerning whether or not a student matched all items correctly. If the student did not match all items correctly after the third attempt, the instructor entered a "no time"

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[3]Fifty-eight students comprise the normative sample for the matching/sorting and manipulative phases of the program. The author used only those students who completed the entire pretest and posttest battery. In order to avoid skewing the results, he eliminated some students from the sample. The students eliminated included those with orthopedic involvement in the hands and/or arms, autistic students and students with severe vision problems.

for the posttest. If the student matched all items correctly, then the instructor administered a posttest stopwatch timing. He compared the pretest and posttest scores and computed the significance level from the data. As a group, students who completed both pretest and posttest, worked faster on the posttest on all eight boxes. Significance levels for the eight boxes ranged from .001 to .10. (See Table I, p. 7) On pretest students averaged 3:41 for all matching/sorting activities, compared to 2:48 for posttest.[4] (See Table III, p. 10) Of the students who completed both pretest and posttest satisfactorily, 75% improved on the posttest. (See Table IV, p. 11) On pretest students performed an average of 49% of all matching/sorting activities, compared to 71% for posttest. (See Table II, p. 9)

The matching/sorting unit culminates with a Fifty-Cell Metal Button Sorting Box. (See Figure II, p. 13) Although, many of the buttons are grossly different and easy to distinguish from each other, some have only subtle differences in size, shape or embossing. Buttons that look similar make the task more difficult. Because the box

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[4]The author has not yet conducted any systematic research concerning the relationship between the length of time matching/sorting and manipulative tasks take "normal adults" and Jo Kelly students. He has, however, administered a few stopwatch timings to fellow teachers and instructional aides at in-service workshops. This preliminary investigation reveals that the average Jo Kelly student takes two to five times longer to finish a task than the author's colleagues. The author hopes to do more formal research in this area.

TABLE I

DESCRIPTION AND STATISTICAL ANALYSIS OF MATCHING/SORTING ITEMS

Item	Description	Pretest			Posttest			t
		R	%	X	R	%	X	
Block Sorting Box	Thirteen cells filled with different shaped blocks, such as rectrangular prisms, spheres, etc. (See Figure I, p. 12)	:14 to 2:45	95	:51	:18 to 2:26	100	:41	.001
Miscellaneous Sorting Box	Twenty-eight cells filled with items, such as clamps, corregated nails, brass fittings, rivets, etc.	:43 to 16:53	75	2:30	:53 to 5:51	93	1:48	.001
Button Sorting Box	Twenty-five cells filled with different sizes, types and colors of buttons	:29 to 11:17	59	2:14	:29 to 5:15	86	1:55	.05
Washer Sorting Box	Sixteen cells filled with different sizes and types of washers, i.e., flat washers and lock washers	:35 to 3:55	57	1:45	:33 to 3:51	79	1:17	.001

TABLE I Continued

Bolt Sorting Box	Twenty cells filled with different sizes of hex bolts, square bolts, allen bolts, and slotted machine bolts	:57 to 9:38	50	3:00	:56 to 4:56	81	2:10	.01
Nut Sorting Box	Twenty-one cells filled with different sizes of hex nuts, square nuts, lock nuts and cap nuts	1:15 to 8:09	36	2:29	:58 to 7:00	59	2:10	.05
Nail Sorting Box	Sixteen cells filled with different lengths of common nails, finishing nails, roofing nails and tacks	:39 to 5:46	34	1:58	:38 to 7:01	63	1:34	.10
Fifty-Cell Metal Button Box	Fifty cells filled with different sizes and designs of metal buttons (See Figure II, p. 13)	3:34 to 41:05	22	13:02	3:42 to 37:47	45	10:04	.01
Screw Sorting Box	Twenty-three cells filled with different sizes of round and flat head wood screws and sheet metal screws	2:29 to 9:23	19	5:16	1:42 to 7:09	41	3:37	.01

Key to Table I R=Range of times, %=Percentage of students completing task satisfactorily, X=mean or average time for students to complete task, t=significance level

TABLE II

MATCHING/SORTING ITEMS BY DIFFICULTY

Difficulty	Item	Pre	Post
Very Easy	Block Sorting Box	95	100
Easy	Miscellaneous Sorting Box	75	93
Middle Range	Button Sorting Box	59	86
	Washer Sorting Box	57	79
	Bolt Sorting Box	50	81
Difficult	Nut Sorting Box	36	59
	Nail Sorting Box	34	63
Very Diff.	Fifty-Cell Metal Button Box	22	45
	Screw Sorting Box	19	41
	TOTALS	49%	71%

TABLE III

MATCHING/SORTING ITEM BY TIME CONSUMPTION

Time	Item	Average Time	
		Pre	Post
Very Short	Block Sorting Box	:51	:41
Short	Washer Sorting Box	1:45	1:17
Middle Range	Nail Sorting Box	1:58	1:34
	Button Sorting Box	2:14	1:55
	Nut Sorting Box	2:29	2:10
	Miscellaneous Sorting Box	2:30	1:48
Long	Bolt Sorting Box	3:00	2:10
	Screw Sorting Box	5:16	3:37
	Fifty-Cell Metal Button Box	13:02	10:04
	TOTALS	3:41	2:48

TABLE IV

MATCHING/SORTING ITEM BY POSTTEST IMPROVEMENT

Item	C	I		S		R	
		N	%	N	%	N	%
Fifty-Cell Metal Button	13	13	100	0	0	0	0
Screw Sorting Box	11	10	91%	0	0	1	9
Nut Sorting Box	22	17	76	2	9	3	15
Miscellaneous Sorting Box	41	31	76	1	2	9	22
Block Sorting Box	55	41	74	1	2	13	24
Button Sorting Box	34	25	74	0	0	9	26
Washer Sorting Box	33	23	70	2	6	8	24
Nail Sorting Box	20	14	70	1	5	5	25
Bolt Sorting Box	29	19	66	1	3	9	31
TOTALS	257	192	75	8	3	57	22

KEY TO TABLE
C=Number of students satisfactorily completing both pretest and posttests
I=Number and percentage of students improving on posttest
S=Number and percentage of students scoring the same on pretest and posttest
R=Number and percentage of students scoring lower or regressing on posttest

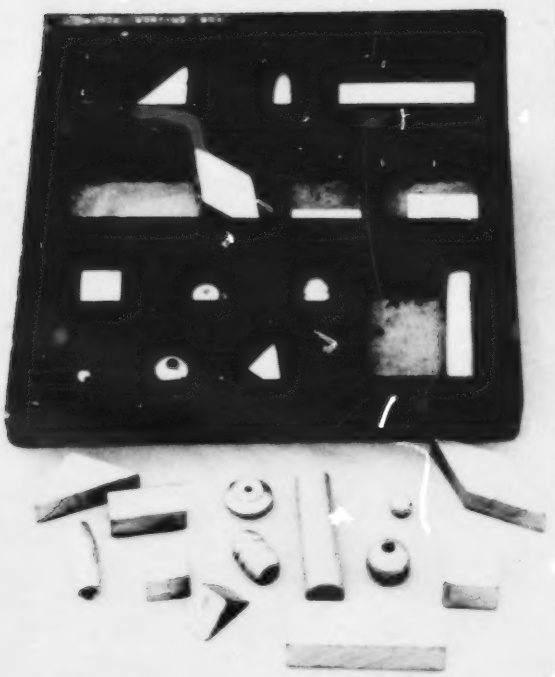

Figure I, The Block Sorting Box is a simple and quickly completed matching/sorting activity.

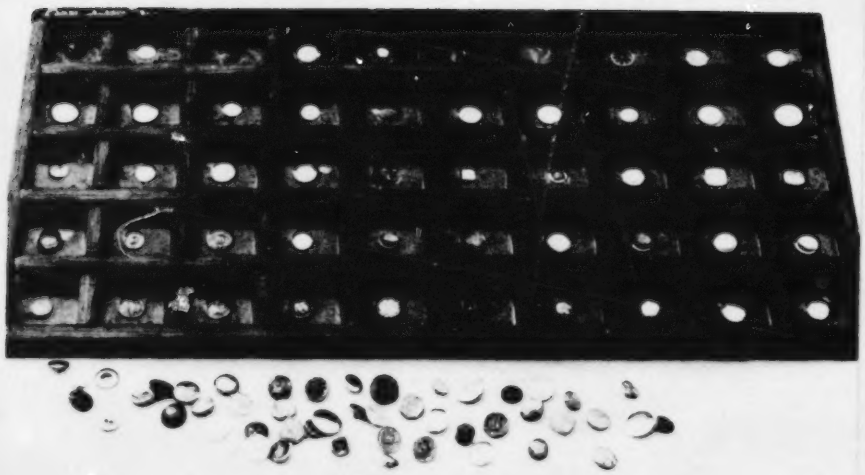

Figure II. The Fifty-Cell Metal Button Sorting Box is an example of a difficult and time-consuming matching/sorting activity.

contains fifty cells, determining the percentage of buttons students match correctly is simple. On pretest, students matched an average of 75% of the buttons correctly. On posttest, they averaged 84% correct responses. Students improved at the .001 level of significance.

Twenty-two percent of the students matched all buttons correctly on both pretest and posttest. In terms of time consumption, they averaged 13:02 on pretest and 10:04 on posttest. The difference represented a 23% increase in efficiency, an improvement at the .01 level of significance. On posttest an additional thirteen students matched all buttons correctly. Forty-five percent of the students matched all buttons correctly on posttest.

Manipulation

The manipulative unit consists of tweleve items. Students manipulate bolts, nuts and washers, componenets of a ball-point pen and different sizes of pegs. As with the matching/sorting unit, the tasks vary in degree of difficulty (See Table VI, p. 18) and in the time they take to complete. (See Table VII, p. 19) Skills enhanced through the unit include finger dexterity, eye-hand coordination, ability to recognize the relationship involved in a particular size bolt, nut and washer, ability to recognize logical sequencing of parts in an assembly, ability to recognize a discernable pattern, and the ability to grasp spatial relationships.

TABLE V

DESCRIPTION AND STATISTICAL ANALYSIS OF MANIPULTIVE ITEMS

Item	Description	Pretest			Posttest			t
		R	%	X	R	%	X	
Washer Stacking	Students place seventy-two flat washers on a metal dowel mounted vertically in a block of wood. (See Figure III, p. 21).	1:23 to 6:17	100	3:02	:52 to 6:27	100	2:26	.001
Nut Manipul-ation	Students remove and replace fifteen nuts on a 5/16" threaded rod mounted vertically in a block of wood.	3:25 to 20:20	97	9:59	3:16 to 17:48	100	6:21	.001
Coarse/ Fine Thread Blocks	Students place 3/8" coarse thread nuts and 3/8" fine thread nuts on bolts mounted in opposite sides of a block.	:59 to 10:59	93	4:15	1:18 to 11:20	98	3:03	.001
Multi-Size Nut Manip. Block	Students remove and replace four different sizes of nuts on threaded rods mounted vertically	9:33 to 1 hr. 36:06	91	23:50	9:50 to 1 hr. 27:55	100	21:3	.001

TABLE V, Continued

Length Width Graduated Bolt Blk.	The student places bolts of five different lengths and widths in the correct plateau of a graduated block.	:47 to 9:47	90	2:10	:38 to 3:49	97	1:34	.001
Combination Washer/	The student places six different sizes of washers on six different sizes of bolts mounted vertically in a block of wood.	1:23 to 12:15	81	5:29	1:43 to 11:20	93	4:30	.05
Ball Pen Assembly	The instructor gives the student a tray with six compartments. The student must assemble a five part ball-point pen and place the assembly in the sixth compartment.	7:40 to 39:35	81	19:03	7:40 to 32:50	88	16:50	.01
Assembly Blocks	The student assembles ten sets of Blocks made up of bolt/washer block/washer/nut.	2:14 to 9:50	78	4:52	1:51 to 12:22	95	4:02	.01

Table V. Continued

Multi-Size Washer Stacking	Student stacks four different sizes of washers on metal dowels mounted vertically in a block of wood.	9:32 to 38:26	74	20:48	8:25 to 40:52	91	18:42	.001
Multi-Size Pegboard	Student places eight different sizes of pegs (four pegs of each size) in holes in a board.	1:30 to 9:33	69	3:22	1:00 to 7:40	93	2:33	.001
Length Graduated Bolt Block	Students place thirteen different lengths of bolts in the correct plateau of a board.	2:25 to 16:15	60	6:10	1:48 to 10:46	83	3:51	.001
Assembly Dominoes	Student assembles a complete set of dominoes. The Assembly Dominoes are a culminating activity for the manipulative unit. (See Figures 4 - 6, pp. 22 - 24)	24:57 to 1 hr. 47:05	60	44:34	21:40 to 1 hr. 46:06	71	40:54	.01

Key to Table V. R=Range of times, %=Percentage of students completing task satisfactorily, X=mean or average time for students to complete task, t=significance level

TABLE VI

MANIPULATIVE ITEM BY DIFFICULTY

Difficulty Level	Item	Pre-test	Post-test
Very Easy	Washer Stacking	100%	100%
	Nut Manipulation	97	100
Easy	Coarse/Fine Thread Blocks	93	98
	Multi-Size Nut Manip. Blk.	91	100
	Length/Width Grad. Bolt Blk	90	97
Middle Range	Combination Washer/Nut	81	93
	Ball Point Pen Assembly	81	88
Difficult	Assembly Blocks	78	95
	Multi-Size Washer Stacking	74	91
	Multi-Size Peg Board	69	93
Very Diff.	Length Graduated Bolt Block	60	83
	Assembly Dominoes	60	71
	TOTALS	80%	92%

TABLE VII

MANIPULATIVE ITEM BY TIME CONSUMPTION

Length of Time	Item	Average Time	
		Pretst	Post
Very Short	Length/Width Grad. Bolt Blk.	2:10	1:34
	Washer Stacking Block	3:02	2:26
Short	Multi-Size Peg Board	3:22	2:33
	Coarse/Fine Thread Blocks	4:15	3:03
	Assembly Blocks	4:52	4:02
Middle Range	Combination Washer/Nut	5:29	4:30
	Length Graduated Bolt Block	6:10	3:51
	Nut Manipulation Block	9:59	6:21
Long	Ball Point Pen Assembly	19:03	16:50
	Multi-Size Washer Stacking	20:48	18:42
	Multi-Size Nut Manip. Blk.	23:50	21:33
Very Long	Assembly Dominoes	44:34	40:54
	TOTALS	12:18	10:31

TABLE VIII

MANIPULATIVE ITEM BY POSTTEST IMPROVEMENT

ITEM	C	I		S		R	
		N	%	N	%	N	%
Nut Manipulation Block	56	51	92	0	0	5	8
Length Graduated Bolt	35	32	91	0	0	3	9
Multi-Size Peg Board	40	36	90	1	2	3	8
Coarse/Fine Thread Blks.	54	46	85	0	0	8	15
Length/Width Grad. Blks.	52	42	91	0	0	10	17
Assembly Dominoes	35	28	80	0	0	7	20
Washer Stacking	58	45	78	0	0	13	22
Multi-Size Washer Stack	43	32	75	1	2	10	35
Assembly Blocks	45	33	73	0	0	12	27
Ball Point Pen Assembly	47	34	72	1	2	12	26
Multi-Size Nut Manip. Blk	53	38	72	0	0	15	28
Combination Washer/Nut	47	33	70	2	4	12	26
TOTALS	565	450	80	5	1	110	19

KEY TO TABLE
C=Number of Students Satisfactorily Completing Both Pre and Post Tests
I=Number and Percentage of Students Improving on Posttest
S=Number and Percentage of Students Scoring Same on Pretest and Posttest
R=Number and Percentage of students whose scores were worse on posttest

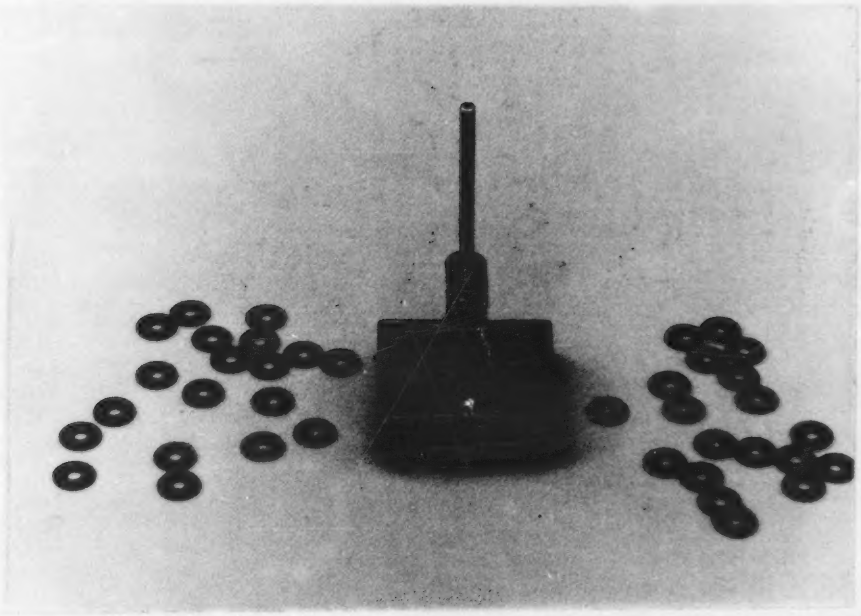

Figure III. The Washer Stacking Block is an example of a simple and quickly completed manipulative activity.

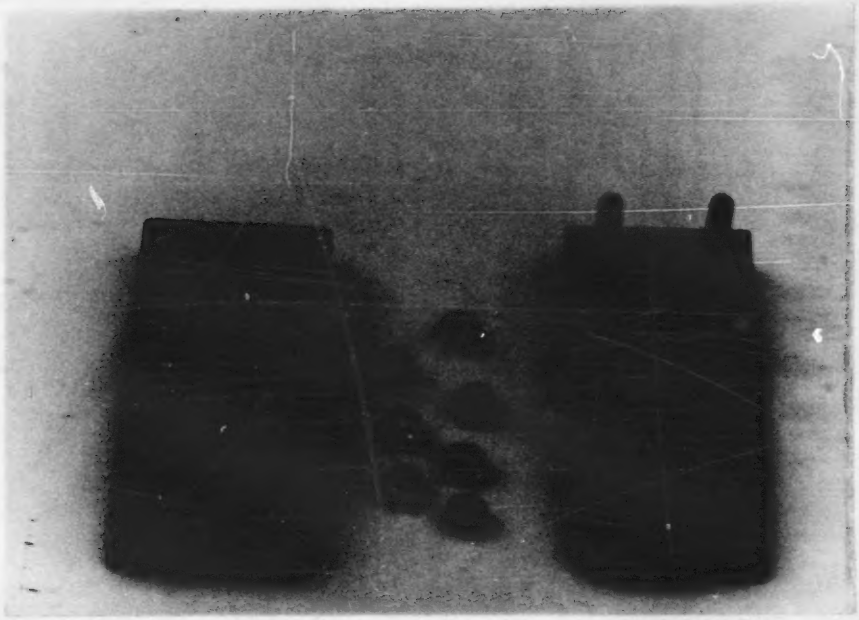

Figure IV. The Assembly Dominoes are an example of a difficult and time-consuming manipulative task. The instructor shuffles the halves with the holes in one group and the halves with the bolts in another group. The complete set consists of twenty-eight dominoes that must be paired up.

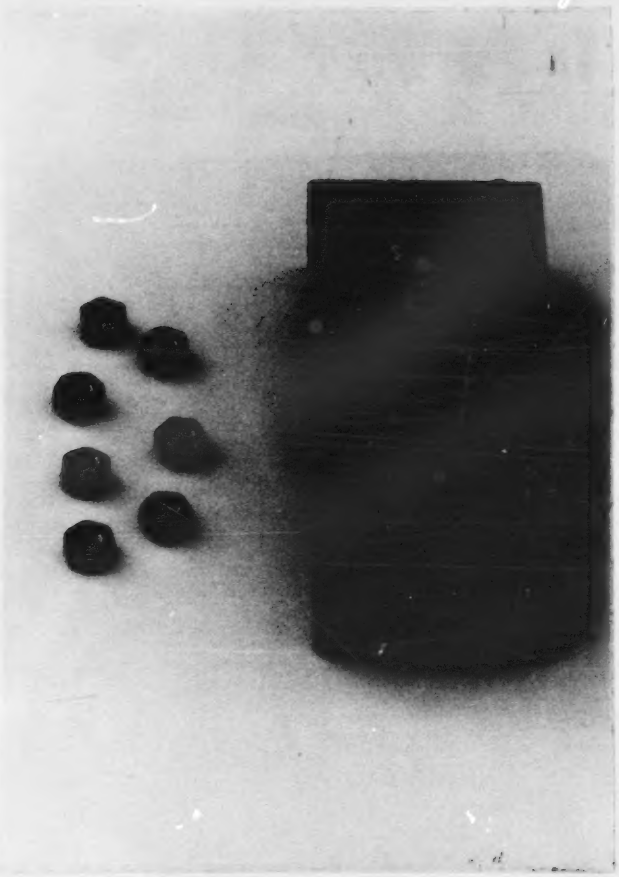

Figure V. The student places the two matching halves together.

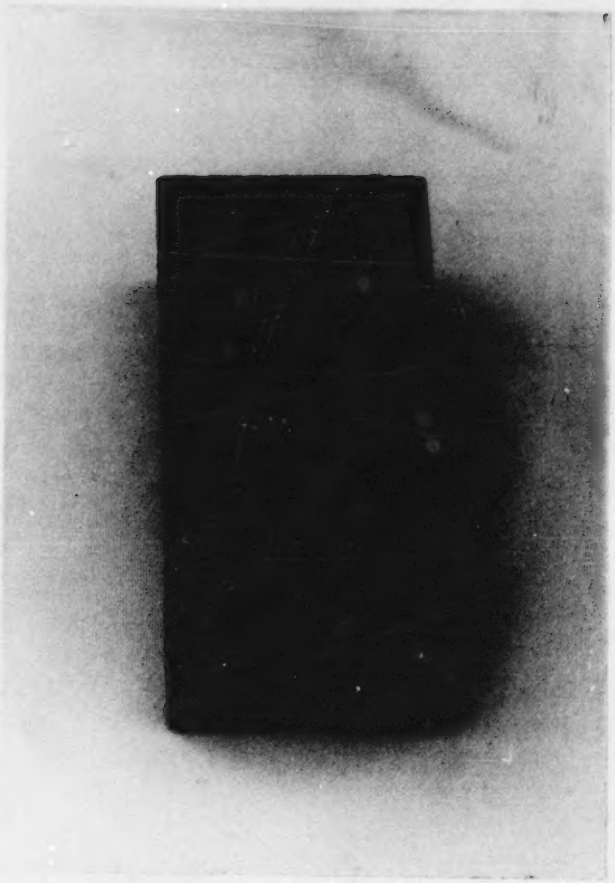

Figure VI. The student secures the two halves of each domino with nuts.

As with the matching/sorting items, the instructor administered pretest and posttest stopwatch timings to the same group of fifty-eight students. He administered the pretest after students had watched a teacher demonstration but had not practiced the item. He administered the posttest after further demonstration and extensive practice with teacher correction and assistance.

The teacher sought improvement in both the percentage of students capable of performing a task and in the performance efficiency. As a group, students who completed both pretest and posttest, worked faster on posttest on all twelve items. Significance levels ranged from .001 to .05. (See Table V, pp. 15 - 17) On pretest students averaged 12:18 for all manipulative activities, compared to 10:31 for posttest. (See Table VII, p. 19) Of the students who completed both pretest and posttest satisfatorily, 80% improved on the posttest (See Table VIII, p. 20) On pretest students performed an average of 80% of all manipulative items compared to 92% for posttest. (See Table VI, p. 18)

Research Findings

The author devised a formula with scores from the matching/sorting and manipulative units that combined speed and accuracy. He used constants to manipulate the scores to read from zero to 100. He arrived at the following conclusions through analysis of the formula scores.

First, although performance and improvement vary from student to student, as a group, students can and do learn the tasks involved. The instructor observed improvement both in the student being able to complete a task and in the efficiency with which the student performed the task. He found that improvement for the first year was statistically significant at the .001 level.

Second, the author correlated the student's IQ with the formula score. He obtained a moderate correlation coefficient of .61.

Third, the author correlated the student's age with the formula score. He found practically no correlation regarding the student's chronological age. Hence, it seems that students do not perform matching/sorting or manipulative tasks better as they get older.

Fourth, the author cross-validated the formula scores by correlating them with scores from the Purdue Pegboard. He obtained a high correlation coefficient of .93.

Further Research

The statistical information the author has presented to this point concerns only those students who have completed one year in the Jo Kelly Occupational Orientation program. Students, however, spend varying lengths of time in the program. Some stay one year, some two years and a few for

three years. Although the author has collected a sizable sample of fifty-eight first year students, he has a second year sample of only fourteen students. he currently has no figures for third year students.[5] Although the second year sample is small, the author has made the following tenative observations from that data.

First, during the summer students tend to regress. Those students, who were posttested in the spring and retested upon return to school in the fall had regressed at the .05 level.

Second, by the end of the second year, students not only regained lost ground, but were performing better than at the end of the first year. Students did however, improve for the second year over the first year at the .20 level of significance.

By following students, who are in the program for more than one year, the author hopes to answer some important questions. The author hopes, for example to determine how long students can benefit from the program and if and when students start getting bored.

The author also plans to do research in other areas. He is interested in finding out if students perform better in seclusion or in a group setting. He wants to know if students perform better while relaxed or while under the pressure of competition with peers. He is also considering

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[5]By the end of the 1982-83 school year, the author will have compiled pretest and posttest stopwatch timings for seventy-three first year students, twenty-one second year students and six third year students.

a longitudinal study to determine how graduates of the program are functioning in a job setting.

Tool Use

The instructor designed the tool use unit to teach students to use various types and sizes of handtools. Students use slotted and phillips screwdrivers, and open-end, allen and adjustable wrenches.

The teacher divided the tool use program into three phases. Phase I involves students using only one tool at a time. In teaching Phase I tool use, the instructor pretested and posttested students on a special tool use test panel. (See Figure VII, p. 19) The test panel requires that students use two sizes of slotted screwdriver, two sizes of phillips screwdriver, five sizes of allen wrench, and a socket wrench handle, extension and five sizes of socket. After pretesting, students work on fifteen progressively harder practice jigs:

1. Large Slotted Screwdriver
2. Small Slotted Screwdriver
3. Large/Small Slotted Screwdriver
4. Large Phillips Screwdriver
5. Small Phillips Scr5ewdriver
6. Large/Small Phillips Screwdriver (See Figure VIII, p. 29)
7. Large Slotted/Large Phillips Screwdriver
8. Small Slotted/Small Phillips Screwdriver
9. Large/Small Slotted and Large/Small Phillips Screwdriver
10. Large Open-End Wrench (See Figure IX, p. 30)
11. Multi-size Open-End Wrench
12. Large Socket Wrench
13. Multi-Size Open-End Wrench
14. Large Allen Wrench
15. Multi-Size Allen Wrench

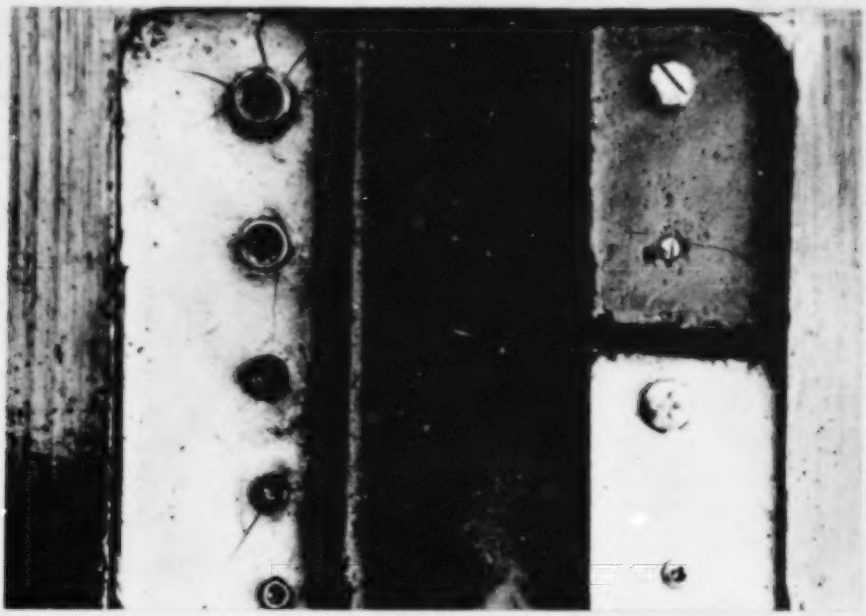

Figure VII. Students use a variety of tools to remove and replace bolts in this test panel.

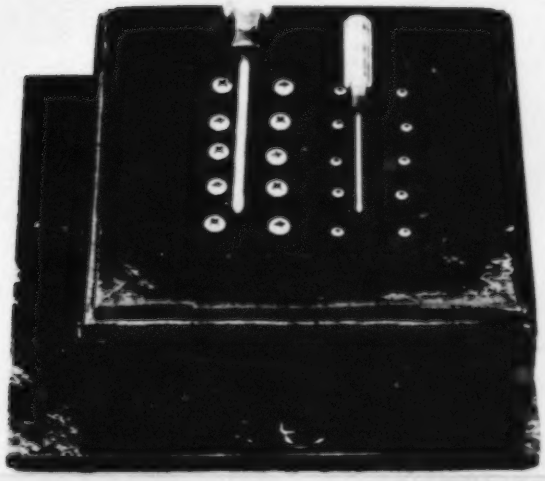

Figure VIII. Students use a large phillips screwdriver and a small phillips screwdriver to remove and replace the bolts in this panel.

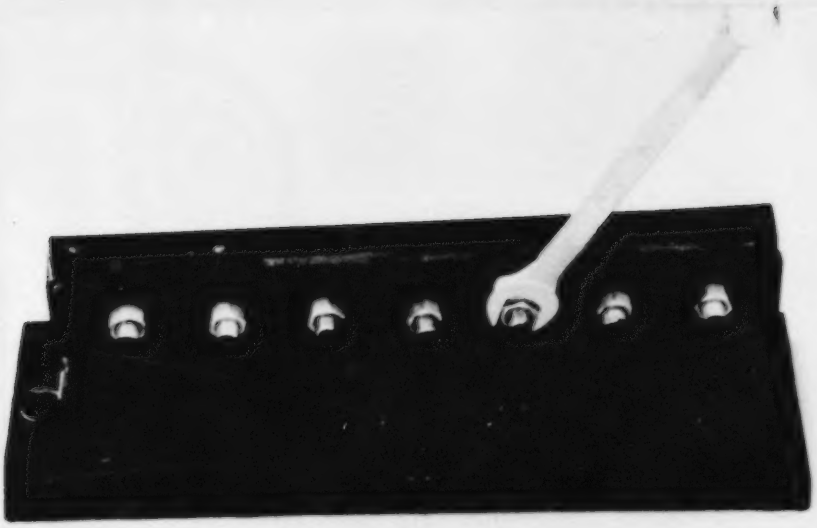

Figure IX. Students use a large open-end wrench to remove the nuts on this panel.

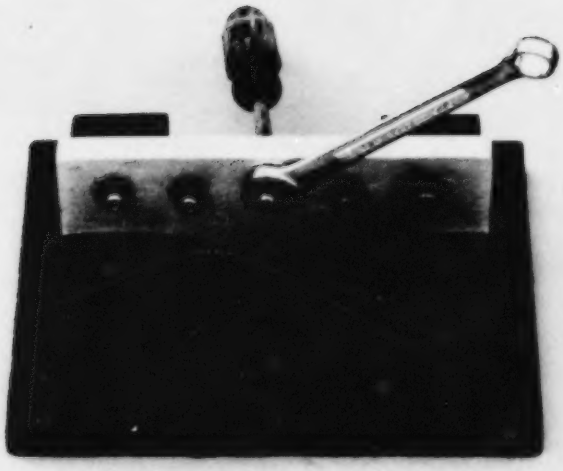

Figure X. Students use a slotted screwdriver and an open-end wrench to remove and replace the nuts and bolts in this panel.

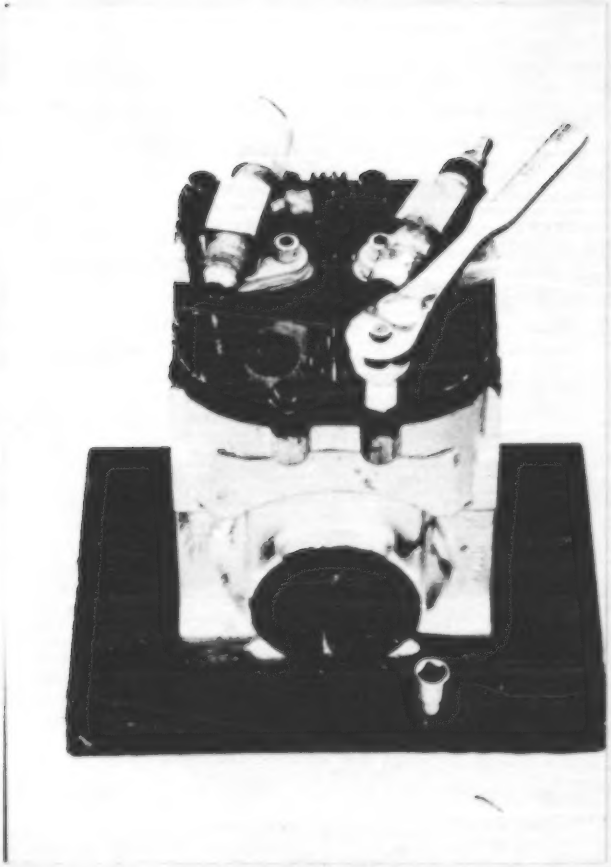

Figure XI. Students use a variety of tools to work on real objects, such as this automobile air compressor.

After the student had practiced the foregoing items, the teacher administered a posttest with the test panel. He devised a formula combining speed and accuracy. Formula scores ranged from zero to 100. Of the thirty-four students pretested and posttested, thirty-two or 94% improved on posttest.[6] Students averaged scores of twenty-nine on pretest and fifty-five on posttest. They improved at the .001 level of significance.

Phase II tool use involves students using two tools at a time. A student might, for example, use a slotted screwdriver in one hand and an open-end wrench in the other to remove a bolt and nut from a panel. Seven items comprise the Phase II group:

1. Large Slotted Screwdriver/Large Open-End Wrench (See Figure X, p. 31)
2. Multi-Size Slotted Screwdriver/Multi-Size Open-End Wrench
3. Large Phillips Screwdriver/Large Open-End Wrench
4. Large Open-End Wrench/Adjustable Wrench
5. Multi-Size Open-End Wrench/Adjustable Wrench
6. Large Allen Wrench/Large Open-End Wrench
7. Multi-Size Allen Wrench/Multi-Size Open-End Wrench

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[6]The author started norming the tool use unit only this year. Hence, the sample is smaller than for the matching/sorting and manipulative units.

In Phase III, students practice using many of the previously listed tools on real objects such as fuel pumps, auto air compressors (See Figure XI, p. 32) and faucets.

Packaging

Five activities comprise the packaging unit. Students perform packaging activities on both an assembly line and individually. Activities in the packaging unit include:

1. Knife, fork and spoon packaged in a ziploc bag, (See Figure XII, p. 35)
2. Knife, fork and spoon packaged in a plastic bag, secured with a bread tie,
3. Knife, fork and spoon rolled in a paper napkin, secured with a rubber band,
4. Nut, bolt and washer placed in a plastic bag, secured with an electronic bag sealer,
5. Small items placed in a film can, secured with a snap-on cap.

On the assembly line, each student performs one small function. When, for example, students are packaging small parts in a film can, the line moves from left to right. The student on the far left hands a film can to the student on the right. This student places a small object into the can and passes it to the next student. The next student also

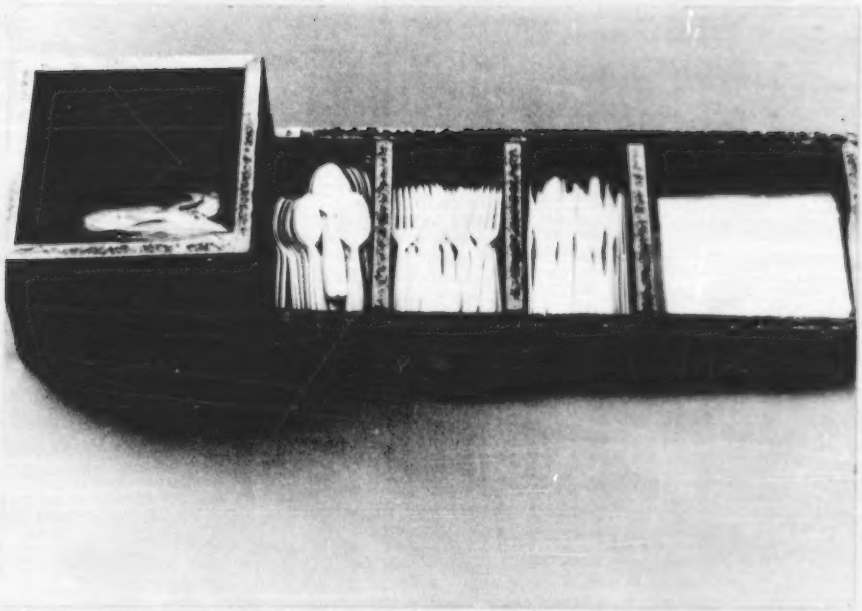

Figure XII. Students package knife, fork and spoon using this packaging tray.

places a small part into the can. When the can reaches the end of the line, the final student snaps a cap on the can and places it in a finishing bin. The instructor expands the assembly line to include any number of students, simply by increasing the number of small parts placed in the can. He sets-up the other four assembly lines in much the same manner. To keep the assembly line running smoothly, sometimes faster students perform more time-consuming tasks, such as securing ziploc bags, snapping caps on film cans or wrapping knives, forks and spoons in a paper napkin.

Assembly lines teach by giving students practice in working together as a group. Individual activities allow the student to build a wider variety of skills. With the exception of the film can activity, students also perform the other four packaging activities individually. Students package individually using packaging trays, such as the one shown in Figure XII, p. 35.

Currently the teacher has established no norms for the packaging unit.

Collating

One activity comprises the collating unit. The teacher sets-up collating as an assembly line. Students pass numbered sheets of paper from left to right. The two students near the end of the line staple the papers together

and place them in folders, respecitively. The instructor can expand the collating unit to accomodate a large number of students, simply by providing more numbered sheets. Students in one class period collate sheets while those in the next class period remove the staples and place the numbered sheets back in the proper stacks.

Mailing Skills

Students engage in several mailing skills activities. Students learn to:

1. Fold business size letters,
2. Place letters in an envelope,
3. Seal envelope,
4. Place stamp on envelope[7]

Higher functioning students place return address and mailing address on envelopes from a model written on the chalkboard. Higher functioning students also use the "Mail Sorting Training Kit" available from EBSCO Curriculum in Birmingham, Alabama. The "Mail Sorting Training Kit" teaches students to sort mail by the last name of the customer, the state and the zip code.

More Information

Persons interested in purchasing copies of Curriculum Bulletin #615 may contact Dr. Dewey W. Mays, Jr., Director of Curriculum, Fort Worth Independent School District,3210 W Lancaster, Fort Worth, Texas 76107, 817-336-8311. Those

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[7]Publishers stamps are used instead of real stamps because they are readily available and cost noting.

wishing to tour the Jo Kelly School in general or the Occupational Orientation Program in particular, should contact Sarah McKenzie, Principal, Jo Kelly School, 201 N. Bailey, Fort Worth, Texas 76107, 817-626-0321. The author will provide slide show and/or hands-on in-service programs. Contact Don Skaggs at the Jo Kelly School address or phone to inquire about these services.